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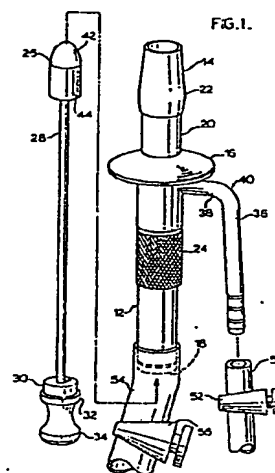
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⑦① Applicant: **Howell, Richard Owen**  
124 Sefton Park Road St. Andrews  
Bristol Avon (GB)

⑦② Inventor: **OULETTE, Gloria**  
2829a Dundas St West Apartement 2  
TORONTO Ontario (CA)

⑤④ **Colonic Irrigator.**

⑤⑦ A gravity supplied Irrigator for colon cleansing has an open ended cylindrical member (12) with the inner end (14) tapered to accommodate a removable conically headed obturator (26) extending from the inner end (14) with the body of the conical portion (42) bearing against the inner surface of the inner end (14). A gravity actuated fluid supply to the irrigator is provided by a conduit (36) leading into the cylindrical member (12) intermediate of its ends (14,18) and the obturator (26) is removable through the cylindrical member (12) in order for the fluid supply to enter the irrigator. The conduit (36) supply is preferably offset in relation to the longitudinal axis of the cylindrical member (12) to provide a swirling action to the entering fluid. The cylindrical member (12) has an outwardly extending circumferential flange (16) intermediate of the inner end (14) and the conduit (36), which flange (16) limits the insertion of the irrigator.





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# EUROPEAN SEARCH REPORT

Application Number

EP 88 30 0032

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	US-A-3 771 522 (J.J. WAYSILK) * Column 6, line 51 - column 7, line 2; figures 12-15 *	1,4-7	A 61 M 7/00
Y	----	2,3	
Y	GB-A-1 597 867 (PROJECTUS INDUSTRI-PRODUKTER AB) * Page 3, lines 63-69; figures 2,3 *	2,3	
A	US-A-1 566 061 (C.E ZIEGLER) * Page 1, lines 98-105; figure 1 *	1,4	
P,X	WO-A-8 701 596 (V. DOTOLO) * Claim 11; figure 4 *	1,4-7	
A	US-A-2 313 805 (B.B. CRAWFORD) * Page 2, left-hand column, lines 23-25; figure 2 *	7	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			A 61 M
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17-11-1988	Examiner GERARD B.E.
CATEGORY OF CITED DOCUMENTS			
<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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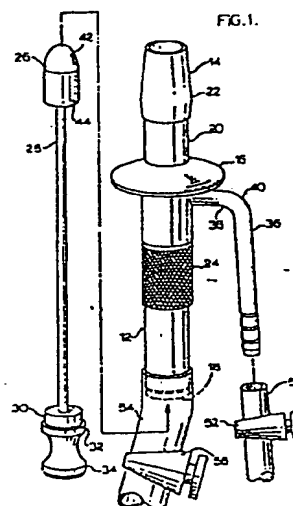
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(71) Applicant: Howell, Richard Owen  
124 Sefton Park Road St. Andrews  
Bristol Avon (GB)

(72) Inventor: OUELETTE, Gloria  
2829a Dundas St West Apartment 2  
TORONTO Ontario (CA)

## (54) Colonic Irrigator.

(57) A gravity supplied irrigator for colon cleansing has an open ended cylindrical member with the inner end tapered to accommodate a removable conically headed obturator extending from the inner end with the body of the conical portion bearing against the inner surface of the inner end. A gravity actuated fluid supply to the irrigator is provided by a conduit leading into the cylindrical member intermediate of its ends and the obturator is removable through the cylindrical member in order for the fluid supply to enter the irrigator. The conduit supply is preferably offset in relation to the longitudinal axis of the cylindrical member to provide a swirling action to the entering fluid. The cylindrical member has an outwardly extending circumferential flange intermediate of the inner end and the conduit, which flange limits the insertion of the irrigator.



## Description

## FIELD OF THE INVENTION

This invention relates to an irrigator which has the purpose of cleansing the colon of a human being after the irrigator has been inserted into the rectum.

## PRIOR ART

Many irrigating devices for the colon have been developed and used, the common feature being that the wash fluid flows into the colon by the force of gravity through the irrigator positioned in the rectum and after sufficient pressure has been created, the flow inwards is stopped and the effect of pressure increase causes the fluid, with the waste content, to flow out of the irrigator; the process is repeated until the desired result of cleansing is achieved.

Some of the known irrigators are quite complicated as a number of factors have to be considered in design in order for it to function properly and with the requisite efficiency. One factor is to ensure progressive cleansing of the colon bearing in mind the limitation of pressure which it can stand without discomfort. Another factor is to ensure that the outgoing fluid, with its suspended waste products, does not contaminate the supply of the incoming fluid and it is desirable to minimise the need to sterilise the irrigator after it has been used or prior to the subsequent use. Another important factor is to ensure that there is no damage to the tissues on insertion into the rectum.

## SUMMARY OF THE INVENTION

It is an object of the invention to provide a simple, functional irrigator to progressively cleanse the colon after insertion into the rectum. The irrigator of the invention comprises an open ended cylindrical member with the opening at the one, or inward end, in relation to its insertion into the rectum, tapered to bearingly accommodate a removable conically shaped obturator which closes the tapered opening but protrudes therefrom after insertion of the irrigator into the rectum. Intermediate of the inward and outward ends of the cylindrical member is an outwardly extending flange which bears against the anus after the irrigator has been inserted into the rectum. The purpose of the flange is to limit the entry of the irrigator into the rectum but in cases of extreme disability, it also serves the purpose of preventing fluid from escaping around the irrigator and not through it, as desired.

It is one feature of the invention that the cylindrical member has a gravity actuated fluid supply conduit connected thereto at a position removed from the tapered inner opening with respect to the circumferential flange. Furthermore, this conduit is preferably offset in relation to the longitudinal axis of the cylindrical member so that the fluid entering the latter adopts a spiral movement which materially assists the cleansing action of the irrigator. The offset may only be of a few degrees and as little as 3°, for instance, is sufficient to provide the spiral movement of the fluid for cleansing. The fluid supply conduit previous to its entry into the cylindrical

supply conduit is angled away from the circumferential flange.

It is a further feature of the invention that the removable obturator is attached to a spindle which traverses the cylindrical member longitudinally, the spindle terminating in a stop which bears against the outward end of the cylindrical member; the stop serves to ensure that the obturator is in bearing relation to the inward tapered end of the cylindrical member when it is inserted into the rectum, thus ensuring a painless entry of the obturator. To permit ingress of the fluid from the conduit supply, the obturator is withdrawn from the cylindrical member through the outward end of the irrigator after insertion in the rectum and the outward end of the irrigator is connected to a take away tube for egress of the contaminated fluid. The ingress and egress of the fluid takes place alternatively and is related to the pressure increase in the colon.

It is a further feature of the invention that the cylindrical member is reduced in diameter adjacent the flange on the side of the inward opening, the purpose of this reduction is to accommodate the sphincter muscle at the entrance to the rectum.

## DESCRIPTION OF THE DRAWINGS

The invention will now be described in relation to the accompanying drawings in which:

Figure 1 is an exploded view of a colonic irrigator constructed according to a preferred embodiment of the invention;

Figure 2 is a view of an irrigator constructed according to Figure 1 but positioned in the rectum before the obturator has been withdrawn.

Figure 3 is a cross section of an assembled irrigator constructed according to the preferred embodiment shown in Figure 1;

Figure 4 is a cross section of the embodiment shown in Figure 3 with the obturator withdrawn and showing the flows inward and outward of the fluid and

Figure 5 is a cross section taken on the lines 5-5 of Figure 4 illustrating the offset of the conduit supply in relation to the irrigator and the resulting spiral flow of the incoming fluid.

## DESCRIPTION OF A PREFERRED EMBODIMENT

With reference to the drawings, there is shown in Figure 1 an open ended cylindrical member generally denoted by the numeral 12 and it has a tapered, inner end portion 14 with a circumferential dish shaped flange 16 intermediate of the tapered end and the other or outward open end 18. Adjacent the flange 16 and inward thereof, is a portion 20 of the reduced diameter in relation to the widest part 22 of the tapered end portion 14.

The cylindrical member is also shown in Figures 1 and 2 to have a serrated portion 24 between the flange 16 and the outward end 18. The purpose of this serrated portion 24 is to provide a grip on the

otherwise smooth surface of the irrigator during its insertion into the rectum as shown in Figure 2.

The cylindrical member 12 carries an obturator 26 which projects from the tapered inward open end 14 as shown in Figure 2 after insertion into the rectum. As shown in Figure 1, the obturator 26 may be withdrawn from the cylindrical member 12 and for this purpose the obturator is attached to a spindle 28 which traverse the cylindrical member 12. The spindle 28 terminates in an integral collar 30 and when the obturator is in place as shown in Figure 3, the collar is located inside the outward open end 18 of the cylindrical member 12.

The collar 30 has an integral flange 32 which bears against the outward end 18 of the cylindrical member 12 as shown in Figure 3. The flange 32 terminates in a handle 34, conventionally shaped as shown.

The construction of the irrigator is completed by a conduit 36 which enters the cylindrical member 12 adjacent to the dish shaped flange 16, see Figure 1, on the side opposite to the inner open end 14. It is a preferred feature of the invention that the conduit is slightly offset in relation to the longitudinal axis of the cylindrical member 12 as shown in Figures 2 and 5 with the result that the fluid entering the cylindrical member 12 is directed to one side and adopts a spiral, or swirling, path which enhances the cleansing action. The conduit 36 is removably connected to a gravity actuated fluid supply not shown and may be controlled, if necessary, by a valve 52.

The conduit 36 has a substantially vertical portion 38 at its entry into the cylindrical member 12 and the portion 38 is bent normally at 40 so that the conduit 36 leads away to the rear of the irrigator.

The obturator 26 has a conical head 42 extending from a substantially cylindrical body 44 which has a diameter greater than the internal diameter of the tapered inward end portion 14 of the cylindrical member 12. On insertion of the irrigator as shown in Figure 2, the conical head 42 is in bearing relation to the tapered inward end portion 14 while protruding from the cylindrical member 12. This relation provides a smooth transition between the two parts and results in painless entry of the irrigator into the rectum.

The bearing relation referred to above is ensured by locating the flange 32 on the spindle 28 at a position so that on abutment of the flange 32 with the outer end 18 of the cylindrical member 12, the obturator body 44 will always bear against the inner end surface 14 of the cylindrical member 12.

The operation of the irrigator is simple and briefly described. As shown in Figure 2, it is inserted into the rectum and this to a predetermined extent, about 40 mm, which distance is ensured by contact of the dish shaped flange 16 with the body. Prior to insertion of the irrigator, the patient lies on the left side to straighten the sigmoid which is the lower part of the colon, and generally denoted by the numeral 48, while ensuring that the conduit tube 36 is located above the cylindrical member 12. The obturator 26 is then withdrawn and the conduit tube 36 is connected through a flexible tube 50 provided with the control valve 50. Next, the open outward end 18 is

connected to a conduit 54 provided with a stop valve 56, which conduit 54 leads to waste. The supply of fluid commences with the opening of the valve 52 and this continues until the pressure is built up to the extent that it should be relieved at which time the valve 56 is opened. When the flow of waste fluid ceases, the valve 56 is closed and the progressive cleansing process is resumed.

It will be appreciated that the waste fluid can never enter the conduit 36 whether the valve 50 is open or closed as the pressure is always against the emerging fluid. This is of great value as it minimises the possibility of contamination of the incoming cleansing fluid.

The location of the supply tank to provide sufficient pressure is a matter for experiment as is also the drop necessary for the waste to flow away on opening the valve 56. The diameter of the widest part 22 of the tapered portion 14 of the cylindrical member 12 is about 15mm for use on patients who have no rectal problems whilst the preferred offset of the conduit 36 is about 3° and this is sufficient to provide the spiralling action of the incoming cleansing fluid which may only be warm water.

The provision of the normally disposed bend at 40 on the conduit 36 which directs the latter rearwardly not only provides for better handling but also reduces the chance of contamination of the incoming supply by the outgoing fluid.

#### Claims

1. A gravity fluid supplied irrigator for colon cleansing comprising a cylindrical member, open inward and outward ends to said cylindrical member, said inward end being tapered, a removable obturator bearingly located in said inward tapered end and projecting therefrom, means secured to said obturator extending through said cylindrical member to remove said obturator through said outward end after said inward end has been inserted into the rectum, a conduit removably connected to a gravity actuated fluid supply, means on said cylindrical member to limit insertion of said inward end into the rectum, said conduit entering said cylindrical member outward of said limiting means, said conduit being operable on removal of said obturator in order to supply fluid into said cylindrical member and then into the colon for cleansing thereof and removable control means securable to said outward end to permit egress of fluid after sufficient pressure has been built up in the colon.

2. An irrigator according to Claim 1 where said conduit is offset in relation to the longitudinal axis of said cylindrical member in order to induce a spiral action to the entering fluid.

3. An irrigator according to Claim 2 wherein said offset is about 3°.

4. An irrigator according to Claims 1 and 2 wherein said means for limiting insertion of said inward end is an outwardly extending circum-

ferential flange on said cylindrical member.

5. An Irrigator according to Claim 1 wherein said obturator has a conical head to a cylindrical body, the outer surface of which bears against the inner surface of said inner tapered end and said conical head extends therefrom.

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6. An Irrigator according to Claim 5 wherein said cylindrical body is attached to a spindle traversing the interior of said cylindrical member, a stop on said spindle bearing against said outward when said cylindrical body bears against the inner surface of said inner end thus ensuring a smooth transition of the outer surface of the inner end and the conical head.

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7. An Irrigator according to Claims 1, 2 or 3 wherein said conduit prior to its entry into said cylindrical member is rearwardly directed to provide a substantially normally disposed bend.

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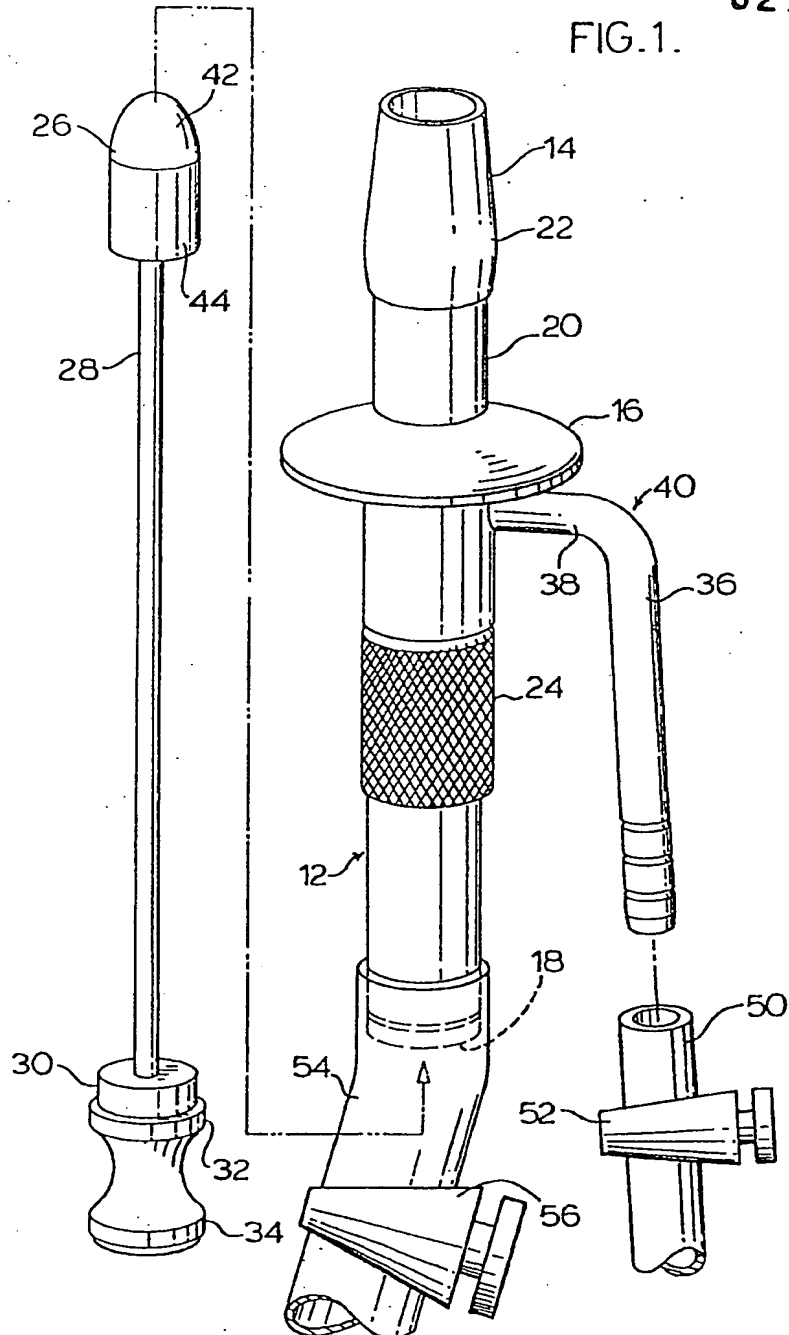
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FIG. 1.



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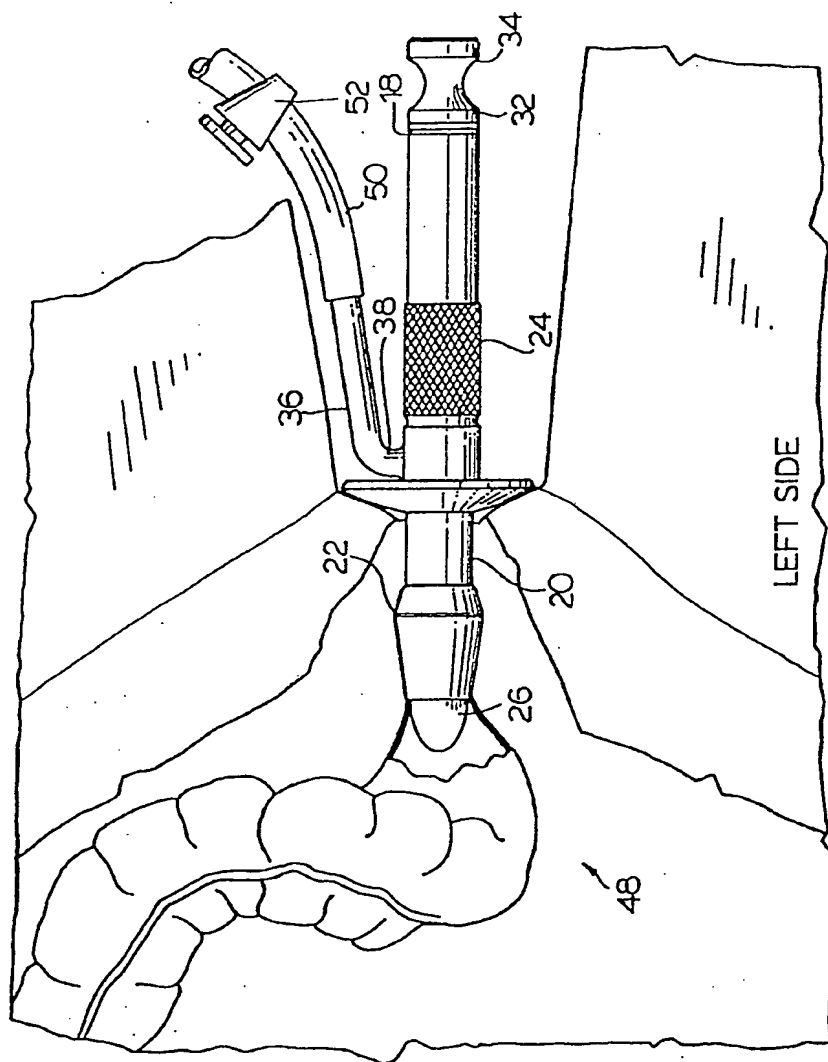


FIG. 2.



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FIG.3.

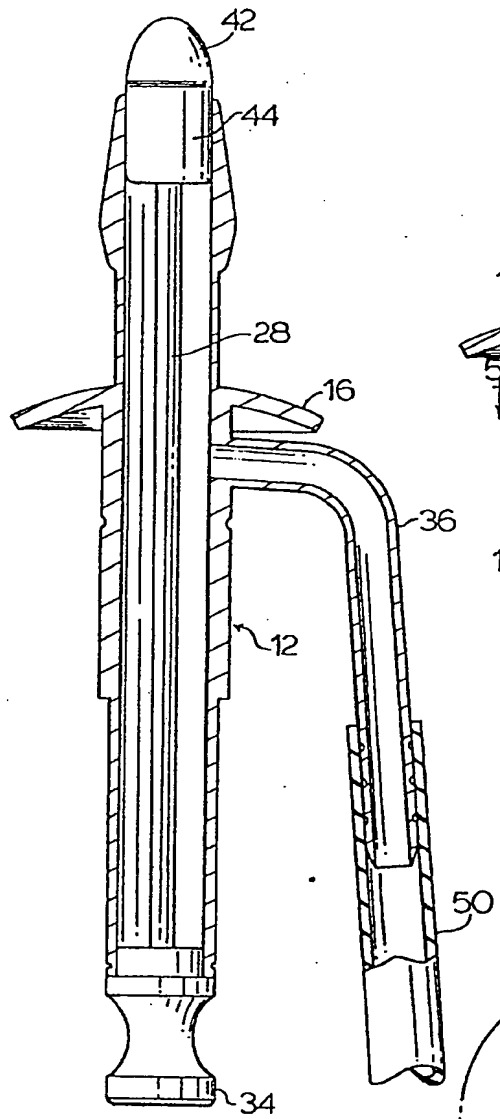


FIG.4.

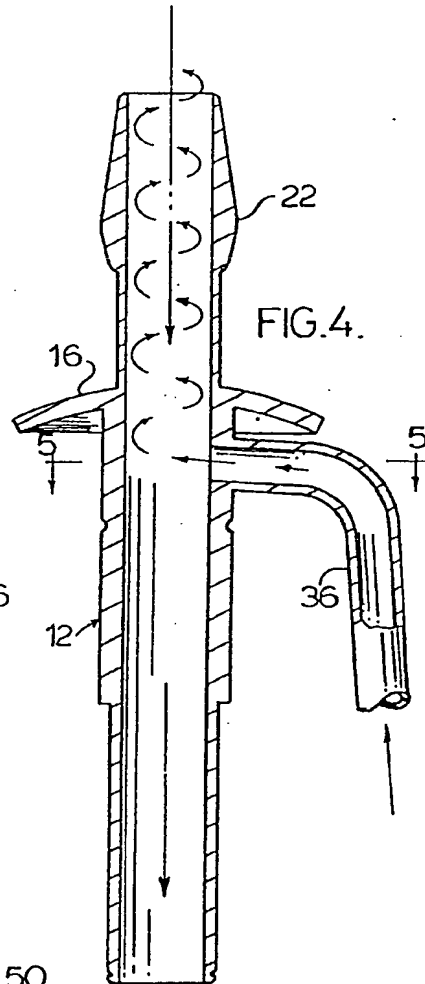


FIG.5.

